

WHAT IS CLAIMED IS:

1. A magnetic recording medium for use with a magnetic recording head comprising a substrate having a front side and a backside, a longitudinal direction and a crossweb direction, said substrate having a magnetic layer formed over said front side of said substrate comprising magnetic pigment particles, and a binder system therefor; said magnetic recording medium having a cross web dimensional difference from said magnetic recording head of less than 900 microns/meter over a temperature range of about 35 degrees, and over a relative humidity range of about 70%.

2. A magnetic recording medium comprising a non-magnetic substrate having a front side and a backside, a magnetic layer formed over said front side of said substrate, said magnetic layer comprising magnetic pigment particles, and a binder system therefor; said substrate being subjected to a biaxial tensilization process, said magnetic recording medium having a coefficient of thermal expansion of from about 5 ppm/C to about 10 ppm/C and a Wyko surface roughness of less than 10 nm..

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3. A magnetic recording medium comprising medium suitable for recording using a magnetic recording head, said magnetic recording medium comprising a non-magnetic substrate having a front side and a backside, a magnetic layer formed over said front side of said substrate, said magnetic layer comprising magnetic pigment particles, and a binder system therefor; said substrate being subjected to a tensilization process, wherein said magnetic recording medium has a coefficient of thermal expansion having a value from about 50% to about 150% of the coefficient of thermal expansion for said magnetic recording head.

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4. A magnetic recording medium according to claim 3 wherein said magnetic recording head is formed on a substrate wafer of an  $\text{Al}_2\text{O}_3$ –TiC bi-phase ceramic formed from aluminum oxide and titanium carbide.

5 5. A magnetic recording medium according to claim 1 wherein said biaxially tensilized substrate is selected from the group consisting of polyesters, polyolefins, cellulose derivatives, polyamides, and polyimides.

10 6. A magnetic recording medium according to claim 3 wherein said biaxially tensilized substrate comprises a substrate subjected to film tensilization, said substrate being selected from the group consisting of polyethylene naphthalate and polyethylene terephthalate.

15 7. A magnetic recording medium according to claim 1 wherein said substrate has a thickness of from about 1 to about 10 microns.

8. A magnetic recording medium according to claim 1 wherein the magnetic recording medium has a crossweb modulus of at least about 7 GPa.

20 9. A magnetic recording medium according to claim 1 wherein the magnetic recording medium has a hygroscopic expansion coefficient of less than about 7 ppm/%RH.

25 10. A magnetic recording medium according to claim 1 wherein the magnetic layer comprises a primary ferromagnetic pigment, aluminum oxide, a spherical large particle carbon material, a polyurethane binder, a non-halogenated vinyl binder, a hardener, a fatty acid ester lubricant, and a fatty acid lubricant.

30 11. A magnetic recording medium according to claim 1 wherein the magnetic layer comprises a primary ferromagnetic pigment, aluminum oxide, a

spherical large particle carbon material, a polyurethane binder, a polyvinylchloride binder, a hardener, a fatty acid ester lubricant, and a fatty acid lubricant.